

NGSS



Review and Digital Navigation Guide

Welcome to STEMscopes NGSS 3D!

STEMscopes NGSS 3D shifts the paradigm of traditional science instruction to student-centered, phenomena-based STEM learning. Based on the 5E instructional model and designed for the Next Generation Science Standards, STEMscopes NGSS 3D supports diverse learners. Embedded language supports, dedicated interventions and acceleration modules, and in-depth breakdowns in each lesson meet the needs of all students. Be more than a science teacher: be a STEM teacher.

Don't miss out! Log in to explore everything you need to teach STEMscopes NGSS 3D, including our Teacher Toolbox, program instructions, standards alignment, and more.

Visit <https://www.acceleratelearning.com/science/> and request a preview!





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MEET STEMSCOPES NGSS 3D

WHO WE ARE

Accelerate Learning, Inc. produces STEMscopes™, a comprehensive suite of results-oriented STEM curriculum and professional development solutions used by more than **9 million students** and **600,000 teachers** across all **50 states**. Created by educators for educators, STEMscopes is highly adaptable and affordable, and supports instruction in any kind of learning environment.

MORE THAN DIGITAL

The Accelerate Learning, Inc. team created STEMscopes NGSS 3D to serve teachers and students regardless of their classroom setup or access to technology.

STEMscopes NGSS 3D is a phenomena-driven, comprehensive STEM solution, fully aligned to the Next Generation Science Standards (NGSS). We provide educators with blended, adaptable resources that empower hands-on science learning around meaningful, real-world phenomena. Built by teachers for teachers, our research-based curriculum evolved out of an initiative at Rice University, a nationally recognized institution, to develop and support STEM initiatives for advanced STEM education.

OUR SOLUTION

- Hands-on, collaborative experiences using the 5E+IA lesson model
- A wealth of applicable real-world phenomena using SEPs, DCIs, and CCCs
- Adaptations for any teaching style, whether you're a new or veteran teacher
- Resources in both English and Spanish to support multilingual learners

ACCOLADES & CONNECTIONS

Accelerate Learning's STEM solutions earned awards in three categories of the 2022 Educators Pick Best of STEM Awards. The Educators Pick Best of STEM Awards is the only program created for educators and judged by a qualified panel of STEM educators.

The 21st annual American Business Awards honored Accelerate Learning, Inc. with two Stevie Awards in the Education category group. STEMscopes Science captured the top prize, the Gold Stevie Award, in the Science Instructional Solution category. Judges in ABA's Science Instructional Solution category stated,

“STEMscopes Science shows a commitment to effective learning and continuous improvement and has amazing efficacy results and improvement in passing rates.”

LIFE SCIENCE STORYLINES

	BUNDLES & EST. TIME	ANCHORING PHENOMENA	STORYLINE	SCOPES	PEs
BUNDLE 1	STRUCTURE, FUNCTION, AND INFORMATION PROCESSING 6 WEEKS	The student's mission is to create a preparedness plan for a family backpacking trip through the Grand Canyon.	How does an organism survive in an unfamiliar environment?	Cells Anatomy of a Cell Bodies and Systems Sensory Receptors	MS-LS1-1 MS-LS1-2 MS-LS1-3 MS-LS1-8
BUNDLE 2	GROWTH AND DEVELOPMENT OF ORGANISMS 6 WEEKS	The student's mission is to design a compost system and garden for a large company wanting to become more environmentally friendly.	How can we promote the growth and development of plants and animals?	Reproduction in Plants and Animals Growth of Organisms Introduction to Photosynthesis Energy Flow in Organisms	MS-LS1-4 MS-LS1-5 MS-LS1-6 MS-LS1-7
BUNDLE 3	INTERDEPENDENT RELATIONSHIPS IN ECOSYSTEMS 8 WEEKS	The student's mission is to create a report that maps out the benefits and risks of building an oil pipeline through Yosemite National Park.	How can changes in ecosystems affect interactions and relationships among organisms in an area?	Competition in Ecosystems Organism Interactions in Ecosystems Relationships in Ecosystems Flow of Energy in Ecosystems Dynamic Nature of Ecosystems Ecosystem Biodiversity	MS-LS2-1 MS-LS2-2 MS-LS2-3 MS-LS2-4 MS-LS2-5
BUNDLE 4	INHERITANCE AND VARIATION OF TRAITS 5 WEEKS	The student's mission is to analyze the blood work of veterinary patients and write a lab report for the lead veterinarian about whether the animals have a genetic disorder or viral infection.	Can harmful mutations be passed on to future offspring?	Genes and Proteins Mutations Inheritance and Genetic Variation	MS-LS3-1 MS-LS3-2
BUNDLE 5	EVIDENCE OF COMMON ANCESTRY AND DIVERSITY 4 WEEKS	The student's mission is to write a press release defending the accuracy of the fossil exhibit at the Natural Science Museum by citing evidence from the fossil record, evolutionary relationships, and embryonic similarities.	How do we know that organisms existed millions of years ago?	Fossil Record Evolutionary History and Relationships Embryonic Similarities	MS-LS4-1 MS-LS4-2 MS-LS4-3
BUNDLE 6	CHANGES IN ORGANISMS OVER TIME 3 WEEKS	The student's mission is to write a proposal to the FDA asking permission to create a new crop after their fields were destroyed by a tornado.	How can organisms be bred for specific purposes?	Natural Selection Artificial Selection	MS-LS4-4 MS-LS4-5 MS-LS4-6

EARTH & SPACE SCIENCE STORYLINES

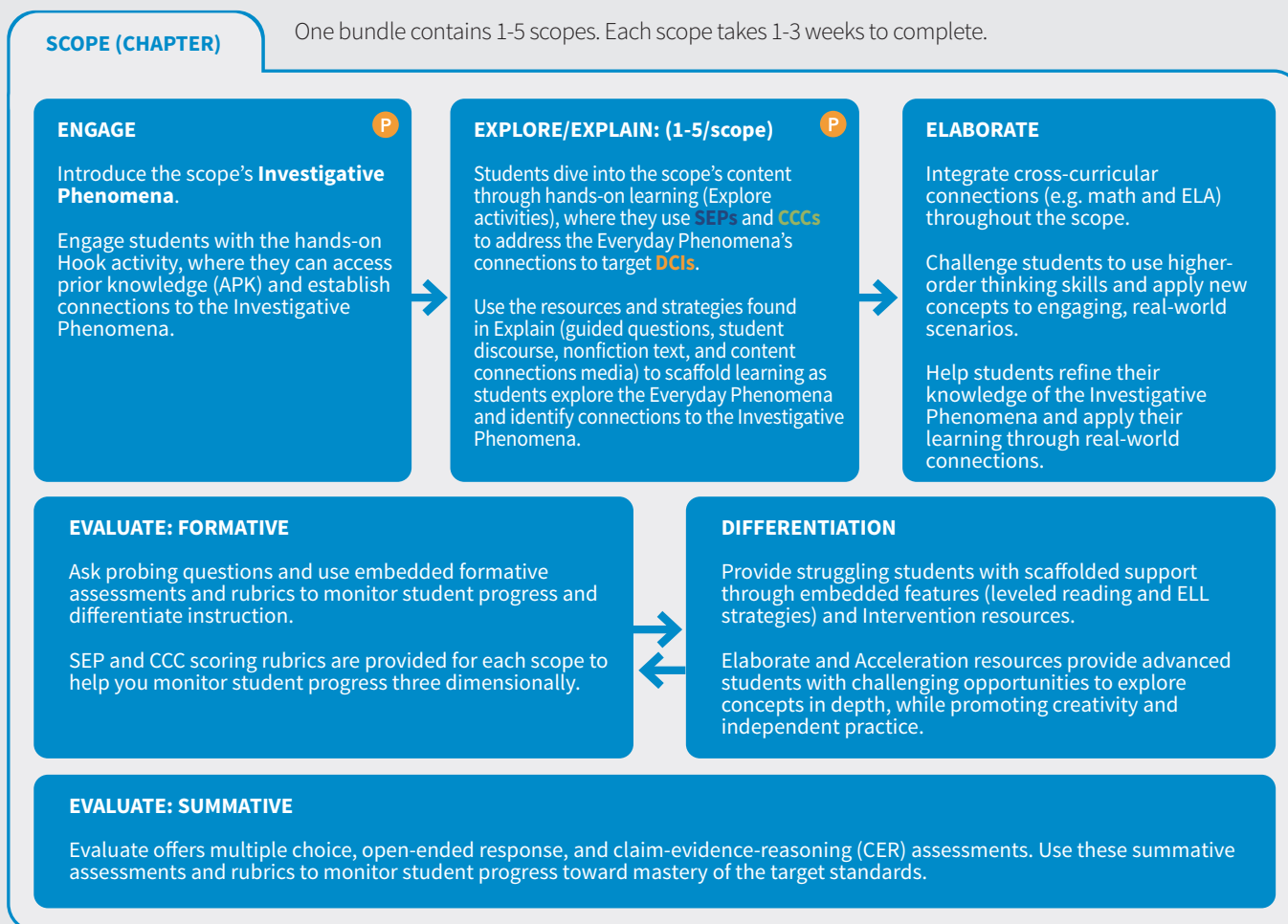
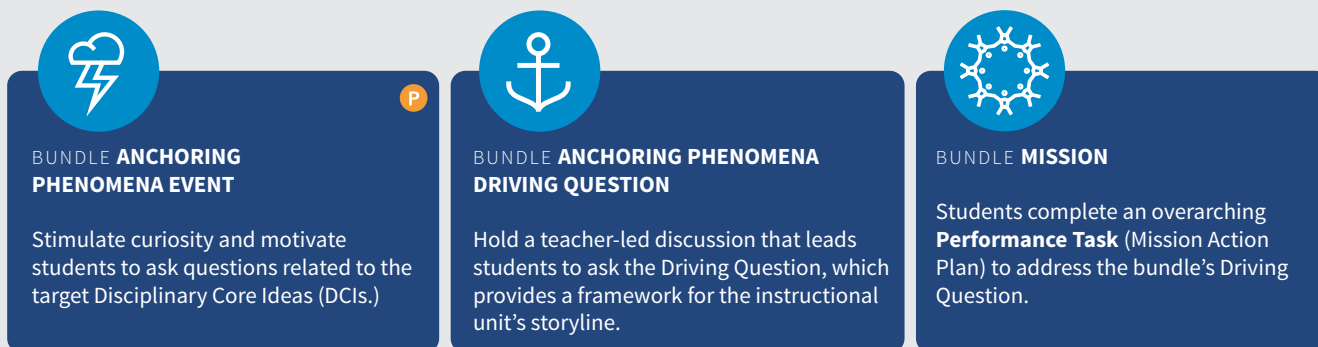
	BUNDLES & EST. TIME	ANCHORING PHENOMENA	STORYLINE	SCOPES	PEs
BUNDLE 1	THE EARTH AND THE SOLAR SYSTEM 5 WEEKS	The student's mission is to create an informational map, like you find at amusement parks, that shows all the objects in the universe that they will take a group of space travelers to visit. Students should label the objects on the map and provide brief descriptions.	What space objects can be seen in the universe and how do they move in relation to each other?	Earth, Sun, and Moon System The Solar System Formation and Motion of Galaxies	MS-ESS1-1 MS-ESS1-2 MS-ESS1-3
BUNDLE 2	THE HISTORY OF PLANET EARTH 5 WEEKS	The student's mission is to create a model predicting the tectonic activity of a newly discovered planet to present to their fellow scientists at NASA.	What clues can tell us about a planet's past and help us predict its future?	Geologic History of Earth Plate Tectonics Seafloor Spreading	MS-ESS1-4 MS-ESS2-3
BUNDLE 3	EARTH'S MATERIALS, SYSTEMS, AND NATURAL HAZARDS 8 WEEKS	The student's mission is to create an emergency response plan for a community living near an active volcano. The students will include a before, during, and after volcano preparedness plan based on their knowledge of Earth's materials, systems, and natural hazards.	What can past geoscience processes tell us about Earth's materials and natural hazards?	Earth Materials Weathering and Erosion Geoscience Processes Natural Hazard Predictions	MS-ESS2-1 MS-ESS2-2 MS-ESS3-2
BUNDLE 4	THE ROLE OF WATER IN THE EARTH'S SURFACE, AND WEATHER AND CLIMATE 7 WEEKS	The student's mission is to identify characteristics, precautions, and weather factors associated with each stage of a hurricane. They will write a series of weather reports to an oil company's risk management division describing a storm system's development into a hurricane over five consecutive days in the Gulf of Mexico.	How can the interactions of the air, ocean, and land be used to predict the formation and movement of a hurricane?	The Water Cycle Predicting Weather Ocean Currents Influences of Weather and Climate	MS-ESS2-4 MS-ESS2-5 MS-ESS2-6
BUNDLE 5	NATURAL RESOURCES AND HUMAN IMPACTS ON EARTH SYSTEMS 6 WEEKS	The student's mission is to act as an environmental scientist hired by a film company to create a documentary about the effects of using plastics on the environment. They will create a storyboard with their findings.	How does the use of natural resources like petroleum impact the environment?	Human Impact on the Environment Human Activities and Global Climate Change Human Dependence on Natural Resources	MS-ESS3-1 MS-ESS3-3 MS-ESS3-4 MS-ESS3-5

PHYSICAL SCIENCE STORYLINES

	BUNDLES & EST. TIME	ANCHORING PHENOMENA	STORYLINE	SCOPES	PEs
BUNDLE 1	CHEMICAL REACTIONS 9 WEEKS	The student's mission is to create their own chemical reaction using fictional substances. They write a balanced chemical equation and then create a model of the atomic structure of the substances used. The final product will include a description of the properties of the reactants and products and how matter is conserved during the reaction.	How can chemical reactions be used to describe the law of conservation of mass?	Structure of Matter Physical and Chemical Properties Synthetic Materials Characteristics of Chemical Reactions Modeling Conservation of Mass	MS-PS1-1 MS-PS1-2 MS-PS1-3 MS-PS1-5
BUNDLE 2	STRUCTURE AND PROPERTIES OF MATTER 4 WEEKS	The student's mission is to create a model of a device that can be used to heat food on Mars. The device must use resources that are already found on Mars.	How does the transfer of thermal energy affect different types of matter?	Heat and Matter Changes in Energy on the Molecular Level Thermal Energy in Chemical Reactions	MS-PS1-4 MS-PS1-6
BUNDLE 3	FORCES AND MOTION 8 WEEKS	The student's mission is to design a 3D maze game that incorporates numerous forces, including electric, magnetic, and gravitational forces.	How do forces impact motion in our daily lives?	Newton's Third Law of Motion Changes in Force and Motion Electric and Magnetic Forces Gravitational Forces	MS-PS2-1 MS-PS2-2 MS-PS2-3 MS-PS2-4 MS-PS2-5
BUNDLE 4	POTENTIAL AND KINETIC ENERGY 3 WEEKS	The student's mission is to create a design for a modified ski jump that can be used in the summer and is made of an alternative material to ice. The design should result in the greatest jump distance possible. Students should include a labeled diagram of their design that lists the material they chose. They will defend their design using calculations of potential and kinetic energy.	How do kinetic and potential energy interact in a system?	Human Impact on the Environment Introduction to Properties of Waves Modeling Waves Through Various Mediums Properties of Visible Light Modeling Light Waves Digital vs Analog Signals	MS-PS3-1 MS-PS3-2 MS-PS3-5
BUNDLE 5	ENERGY TRANSFER IN TEMPERATURE 4 WEEKS	How can you maximize the thermal energy transfer in a system?	The student's mission is to design a device that will allow outdoor enthusiasts to heat their food to a certain temperature and for the food to stay at that temperature for an extended period of time after being removed from the heat.	Thermal Energy Transfer Energy Transfer and Temperature	MS-PS3-3 MS-PS3-4
BUNDLE 6	WAVES AND THEIR APPLICATIONS IN TECHNOLOGIES AND INFORMATION TRANSFER 8 WEEKS	How are different types of waves used in technology and communication applications?	The student's mission is to design a device that uses light waves instead of digital signals to communicate. They will create a sales pitch that includes a visual as well as an explanation of how the device works, how it would make life easier, and the advantages of using light waves over digital signals.	Introduction to Properties of Waves Modeling Waves through Various Mediums Properties of Visible Light Modeling Light Waves Digital vs. Analog Signals	MS-PS4-1 MS-PS4-2 MS-PS4-3

Instructional Bundle (Unit) Overview

Each bundle addresses a bundle of **Performance Expectations** and takes approximately **6-8 weeks** to complete.



Students revisit the bundle mission after each scope to incorporate new learning into the Performance Task.

P = 3 layers of Phenomena

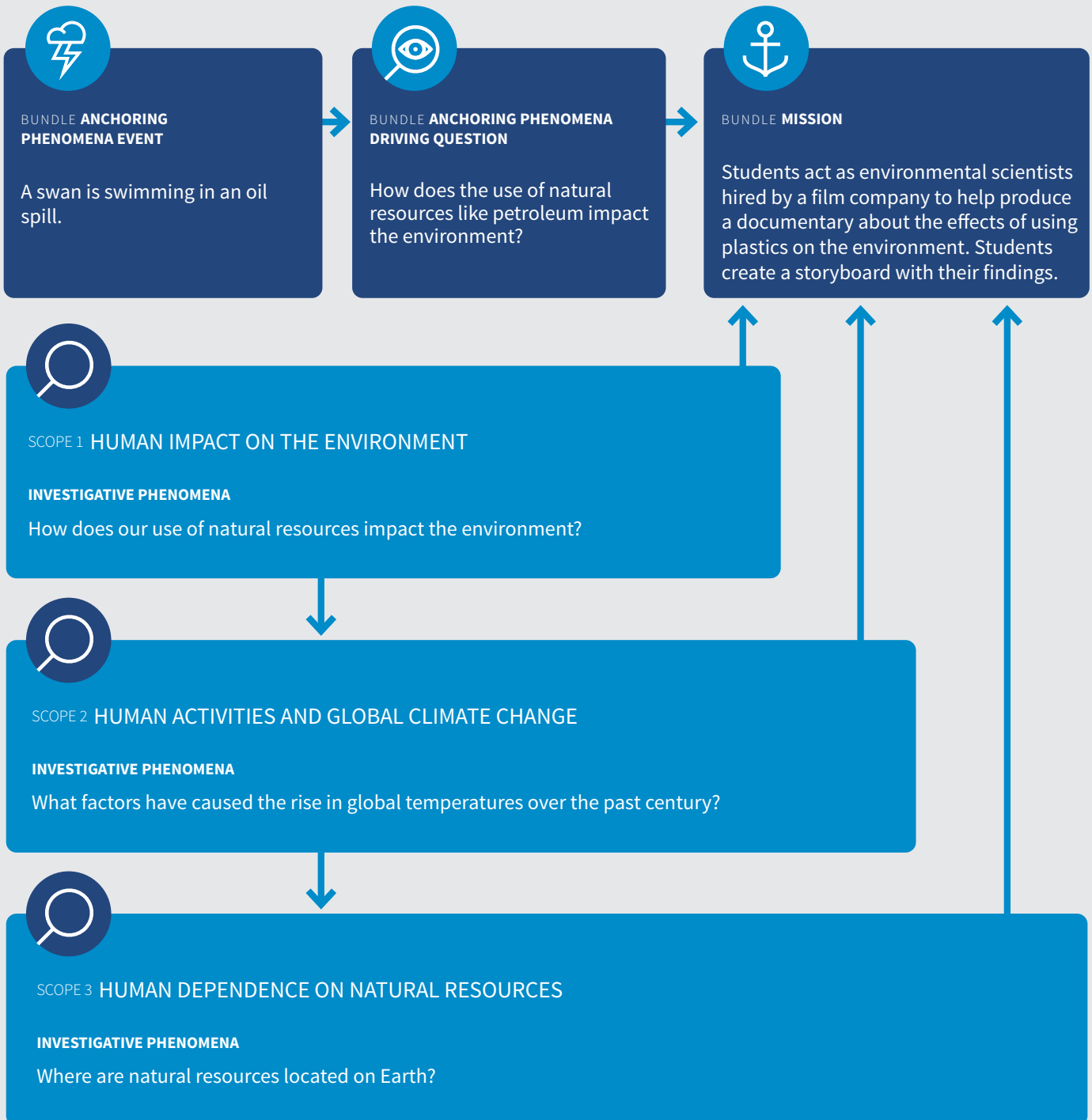


Sample Earth & Space Science Bundle 5

NATURAL RESOURCES AND HUMAN IMPACTS ON EARTH SYSTEMS

BUNDLE STORYLINE

Students begin by watching a video of a swan swimming in an oil spill, followed by a teacher-led discussion about fossil fuels, their impact on living organisms, and their role in global climate change. The teacher guides students toward the Anchoring Phenomena Driving Question, “How does the use of natural resources like petroleum impact the environment?”



HANDS-ON EXPLORATION

Each scope embodies a 5E lesson sequence in which students build an understanding of the Investigative Phenomena by exploring relevant Everyday Phenomena during the scope's Explore activities. Students are referred back to the Investigative Phenomena after each Explore activity to apply their learning and revise and record their thinking.



SCOPE 1 HUMAN IMPACT ON THE ENVIRONMENT How does our use of natural resources impact the environment?

PERFORMANCE EXPECTATIONS

MS-ESS3-3: Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

MS-ESS3-4: Construct an argument supported by evidence for how increases in human population and per capita consumption of natural resources impact Earth's systems.

MS-EST1-3: Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

MS-ETS1-4: Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

HOOK ACTIVITY

EVERYDAY PHENOMENA How do human activities affect current and subsequent populations?

Students play musical chairs to model the effects of human-caused environmental changes on living organisms. Each time the music stops, the teacher describes a human activity that impacts the environment, and students who are unable to find a seat represent organisms that are unable to adapt to the environmental change. Students discuss how these types of changes impact populations and species on a larger scale.

EXPLORE LESSON 1 Tuva – Air Pollution and Human Population

EVERYDAY PHENOMENA What is the relationship between the human population and air pollution?

Students investigate the relationship between human population growth and air pollution by using a computer simulation to analyze real-world data about the change in Earth's atmosphere over time. Students then discuss how pollution impacts the environment and living organisms.

EXPLORE LESSON 2 Scientific Investigation – Ocean Acidification

EVERYDAY PHENOMENA How does carbon dioxide affect the organisms in the ocean?

Students observe carbon dioxide's effect on the pH of a fluid by breathing into a solution of bromothymol blue, then discuss how atmospheric carbon dioxide causes a similar increase in the ocean's pH. Next, students explore the effects that an acidic pH in the ocean would have on calcium carbonate (the makeup of marine organism shells). Students discuss humans' impact on the ocean and marine organisms, then predict what will happen if oceanic acidification continues.

EXPLORE LESSON 3 Engineering Solution – Protect and Monitor

EVERYDAY PHENOMENA How can we design a system to monitor human effects on a natural habitat?

Students work in groups to plan, build, test, and refine a system that monitors how human behavior affects a local ecosystem's biotic and abiotic factors. Students must take into account how humans interact with the ecosystem and affect its biodiversity, and provide a method to measure and monitor the impact of these interactions within the ecosystem.



SCOPE 2 HUMAN ACTIVITIES AND GLOBAL CLIMATE CHANGE What factors have caused global temperatures to rise over the past century?

PERFORMANCE EXPECTATIONS

MS-ESS3-5: Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

HOOK ACTIVITY

EVERYDAY PHENOMENA How has the sea ice changed in the Arctic region since 1979?

Students use a computer simulation to analyze how the Arctic region's sea ice coverage has changed since 1979, then discuss how melting ice causes the sea level to rise. Students use their data to predict changes in sea ice over the next 30 years and discuss the impact on ecosystems and living organisms, including people.

EXPLORE 1 Climate Science

EVERYDAY PHENOMENA What is the greenhouse effect?

Students investigate the greenhouse effect through three model systems, which all begin with students placing a cup of dirt (Earth) under a heat lamp (heating effects of the Sun). In one model, an inverted glass jar (Earth's atmosphere) is placed over the cup of dirt. In the second, students place a jar sprayed with water vapor over the cup of dirt. Students compare each system's temperature change, explore how the models represent the insulation of Earth's atmosphere, and discuss how different factors affect Earth's temperature. Next, the teacher demonstrates that a water-filled balloon takes longer to pop than an air-filled balloon, showing that water absorbs heat. Students discuss how oceans help Earth maintain a stable temperature by absorbing and storing heat, and how increasing temperatures of the atmosphere and oceans affect Earth's ecosystems and living organisms.

EXPLORE 2 Tuva – Global Climate Change

EVERYDAY PHENOMENA What are some causes of global warming?

Students use a computer simulation to analyze the relationship between global temperature and various factors such as solar irradiance, sea level rise, carbon dioxide levels, and sulfur dioxide levels in the atmosphere. Students make evidence-supported claims about the main cause of global warming based on correlations they found in their analysis.

EXPLORE 3 Research – Human Activity Causes and Solutions

EVERYDAY PHENOMENA How have humans contributed to global warming?

Students research how human activities have influenced climate over the last century, compare the speed of climate change now and in the past, explore climate change's effect on organisms in the past and present, and identify possible solutions. Students research one human activity that impacts global warming—including what steps, if any, their state and city have taken to address the issue—and present their findings.



SCOPE 3 HUMAN DEPENDENCE ON NATURAL RESOURCES Where are natural resources located on Earth?

PERFORMANCE EXPECTATIONS

MS-ESS3-1: Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.

HOOK ACTIVITY

EVERYDAY PHENOMENA Where are natural resources located on Earth?

Students use a T-chart to explore the difference between renewable and nonrenewable natural resources.

EXPLORE 1 Activity – It's Not Renewable? So What?

EVERYDAY PHENOMENA What can we predict about the relationship between humans and nonrenewable natural resources?

Students use pretzels to simulate cause-and-effect relationships and then make predictions about human use of nonrenewable natural resources.

EXPLORE 2 Research – How Was It Formed? Where Is It Located? How Do We Use It?

EVERYDAY PHENOMENA How did geological events affect the distribution of natural resources?

Students research nonrenewable natural resources and use collected class information to explain that the distribution of Earth's resources is due to past geologic events and the assumption that these same geologic events will continue to operate in the future. Students assess credibility, accuracy, and possible bias of resources used during their research.

EXPLORE 3 Activity – Use and Consequences Game

EVERYDAY PHENOMENA What are the consequences of using natural resources?

Students play a game using cause-effect relationships to predict which resource would be most vulnerable to a consequence, based on how the resource is used.

EXPLORE 4 Tuva – Earth's Overdrawn Account

EVERYDAY PHENOMENA How does the population affect the production and consumption of fossil fuels?

Students create dot plots, line graphs, and bar charts to explore changes in world population, production of fossil fuels, and the consumption of fossil fuels.

Digital Teacher Resources

→ Teacher Resources & Planning Guide

Access year-long pacing guides and bundle lesson planning guides that provide standard alignment, scope resource overviews, and an estimated timeline to complete each unit. Also find access to 3D supports for parent communication and SEP and CCC student progress monitoring, all over the course of the school year.

→ Bundle

Access unit-level resources, including 3D interactive assessments and project-based performance tasks that connect learning across each bundle and form a coherent storyline. You can even build your unit's storyline around a self-selected anchoring phenomena and customize unit-level performance tasks.

→ Scope

Access resources to implement a 5E lesson for each bundle of Performance Expectations, with comprehensive differentiation to meet the needs of every student.

Use the Planner tool to drag and drop lesson components directly onto your instructional calendar. You can easily organize your plans, make notes, and share them with your colleagues.

How to access the Teacher Planner and calendar feature:

- Create your classroom by selecting the Students tab on the blue navigation bar.
- Click "Add Selection" on the right and name your classroom.
- Click "Create this teacher section."
- Click the Planner tab on the blue bar and choose from the list of grades and scopes on the right-hand side of the page.
- Expand each section to drag and drop your selected scope onto the calendar, then save your changes.

5E Instructional Resources

STEMscopes NGSS 3D scopes (lessons) contain over 25 instructional resources per scope that you can use based on your students' needs and interests. These resources provide opportunities for differentiation, student choice, and content deep-dives, and encourage students to express understanding while making learning interesting, relevant, and fun.

ENGAGE

Engage students through relevant phenomena, prior knowledge, and a hook activity.

Investigative Phenomena, APK, Hook

EXPLORE

Students gain foundational experience that drives discussion and promotes discovery.

Hands-on Activities, Scientific Investigations, Engineering Design Challenges, Research Projects, Tuva Sets (Analysis of Real-Life Data Sets)

Scopes have varying numbers of Explore activities. Explores are scaffolded and doing all Explores is recommended.

EXPLAIN

Focus on key terms and concepts that connect to experiences in the Explore activities.

Picture Vocabulary, Content Connection Videos, Linking Literacy, STEMscopedia

Linking Literacy provides ELA support for reading science nonfiction text.

ELABORATE

Incorporate optional enrichment activities for differentiated learning (teacher's choice).

Leveled Math, Leveled Reading, Science Today, Scientist Spotlight, Career Connections, Simulations

EVALUATE

Students express their understanding of the essential question and provide evidence that supports their thinking.

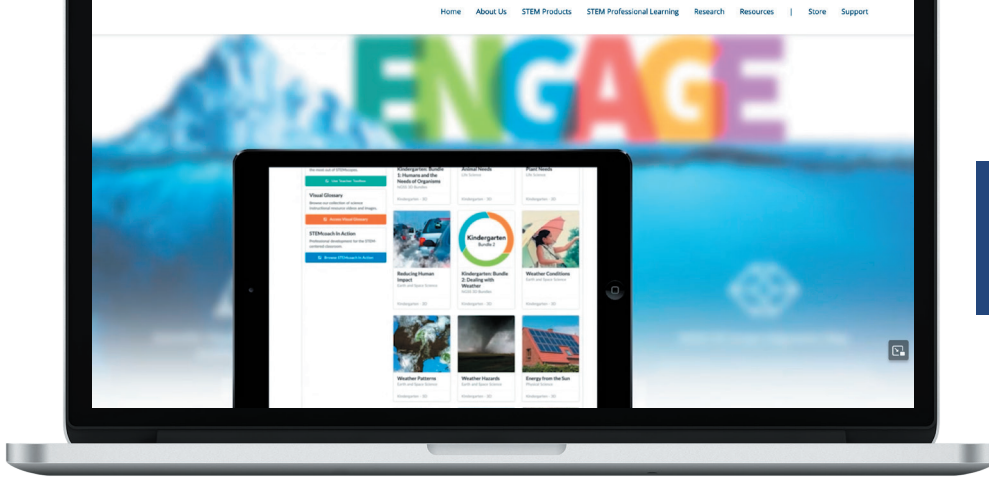
Open-Ended, Multiple Choice, Claim-Evidence-Reasoning (CER)

Leading The Way For A New Learning Experience

Not only do we keep our curricula up to date, but we also ensure a seamless user experience with continuous improvements to the digital platform. Here are just a few helpful features you can utilize within STEMscopes:

- Online/offline mode
- Save-as-you-go processing
- Google Classroom integration
- Responsive design on all devices
- Grade passback with widely used LMSs and SISs
- WCAG A-AA-compliant platforms





Walk through our curriculum with this instructional video.

Navigating the Digital Curriculum

Main Navigation Bar

HOME

View upcoming lessons and customized bookmarks on your dashboard.

PLANNER

Create lesson plans and collaborate with fellow STEMscopes teachers.

SCOPES (START HERE!)

Access all lesson content and teacher supports.

STANDARDS

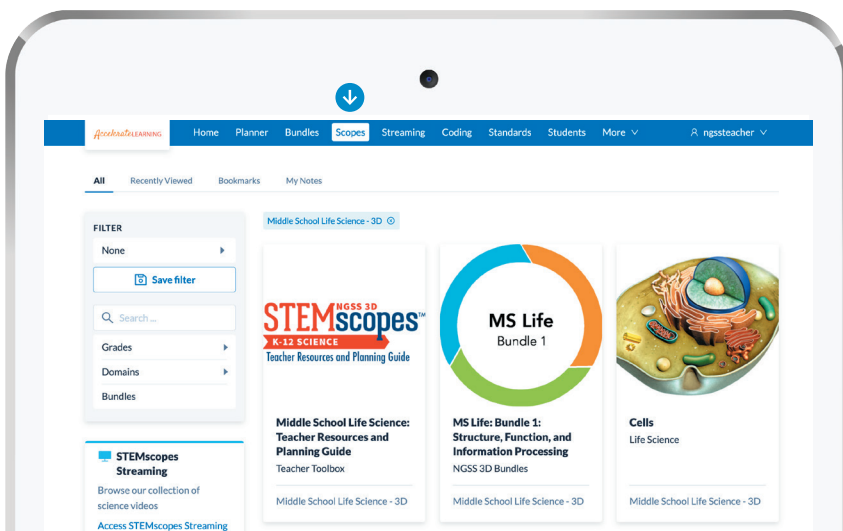
View a breakdown of the NGSS & Skills.

STUDENTS

Manage student accounts, create class groups, and monitor assignment progress and grades.

MORE

Select from a wide variety of assessments, access eBooks, or get help.

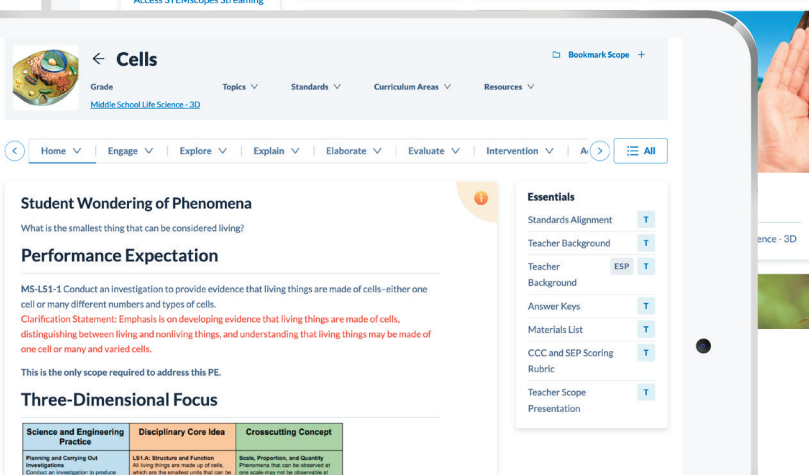


Scopes

STEMscopes NGSS 3D is organized into units (bundles), chapters (scopes), and lessons (hands-on Explores) that build upon each other. Filter by grade, domain, or keyword to find a specific Scope.

A LOOK INSIDE A SCOPE →

After selecting a Scope (chapter), review the planning and instructional resources. The white toolbar at the top can help you access all the features and benefits of STEMscopes NGSS 3D.



Student Wondering of Phenomena
What is the smallest thing that can be considered living?

Performance Expectation
MS-LS1-1 Conduct an investigation to provide evidence that living things are made of cells—either one cell or many different numbers and types of cells.
Clarification Statement: Emphasis is on developing evidence that living things are made of cells, distinguishing between living and nonliving things, and understanding that living things may be made of one cell or many and varied cells.

This is the only scope required to address this PE.

Science and Engineering Practice	Disciplinary Core Idea	Crosscutting Concept
Planning and Carrying Out Investigations Conduct an investigation to produce data to serve as the basis for evidence that meet the goals of an investigation. (MS-LS1-1)	LS1.A: Structure and Function All living things are made up of cells, which are the smallest units that can be said to be alive. An organism may consist of one single cell (unicellular) or many different numbers and types of cells (multicellular). (MS-LS1-1)	Scale, Proportion, and Quantity Phenomena that can be observed at one scale may not be observable at another scale.

→ HOME

Click the **Home** button to access key materials that will help you prepare for the scope activities. These include standards and materials lists, a background explanation for new science teachers or teachers in need of a refresher, and CCC and SEP rubrics that track student progress.

→ ENGAGE

Engage marks the start of 5E learning. First, introduce your students to the Investigative Phenomena, which guides student learning and gives students the opportunity to question what they don't yet understand. Your students revisit the Investigative Phenomena throughout the scope to record ideas and revise their thinking. Next, allow your students to reflect on what they already know using the Accessing Prior Knowledge activity. This will help you identify students' background knowledge. Finally, "hook" student interest with relevant everyday phenomena and a fun, hands-on activity.

Engage

- Investigative Phenomena** (T)
Introductory activity that facilitates a connection between the content and real world phenomena and encourages students to ask why or how something happens.
- Investigative Phenomena** (S)
Introductory activity that facilitates a connection between the content and real world phenomena and encourages students to ask why or how something happens.
- Investigative Phenomena** (ESP, S)
Introductory activity that facilitates a connection between the content and real world phenomena and encourages students to ask why or how something happens.
- Accessing Prior Knowledge** (T)
A brief probing activity to gauge students' prior knowledge before engaging in the inquiry process
- Accessing Prior Knowledge** (S)
A brief probing activity to gauge students' prior knowledge before engaging in the inquiry process
- Accessing Prior Knowledge** (ESP, S)
A brief probing activity to gauge students' prior knowledge before engaging in the inquiry process

The screenshot shows the 'Cells' scope page in the Explore section. The page title is 'Cells' and it is part of the 'Middle School Life Science - 3D' curriculum. The navigation bar includes 'Home', 'Engage', 'Explore', 'Explain', 'Elaborate', 'Evaluate', and 'Intervention'. The 'Explore' section is active, showing a grid of activities:

- Explore 1: Activity - Single or Multi?** (T) - First task in which students complete a rigorous, hands-on activity. Teachers will highlight how students interact with everyday phenomena that relate the investigative or anchoring phenomena to personally experienced situations.
- Explore 1: Activity - ¿Único o múltiple?** (ESP, T) - First task in which students complete a rigorous, hands-on activity. Teachers will highlight how students interact with everyday phenomena that relate the investigative or anchoring phenomena to personally experienced situations.
- Explore 1: Activity - Single or Multi?** (S) - First task in which students complete a rigorous, hands-on activity. Teachers will highlight how students interact with everyday phenomena that relate the investigative or anchoring phenomena to personally experienced situations.
- Explore 1: Activity - ¿Único o múltiple?** (ESP, S) - First task in which students complete a rigorous, hands-on activity. Teachers will highlight how students interact with everyday phenomena that relate the investigative or anchoring phenomena to personally experienced situations.
- Explore 2: Scientific Investigation - Cells Equal Living** (T) - Second task in which students investigate a Question of Inquiry using the
- Explore 2: Scientific Investigation - Las células equivalen a la vida** (ESP, T) - Second task in which students investigate a Question of Inquiry using the

→ EXPLORE

Explore is where you continue hands-on learning with exciting activities. Your students unpack a problem and determine the solution themselves. Whether they're designing a model, conducting an investigation, or gathering data, your students are now in control of their own learning, and that's where real science takes place.

Typically, a teacher will begin with an Explore activity and use Explain's resources to support students in making sense of their hands-on investigation. It is ideal to repeat this cycle, alternating between Explore and Explain.

→ EXPLAIN

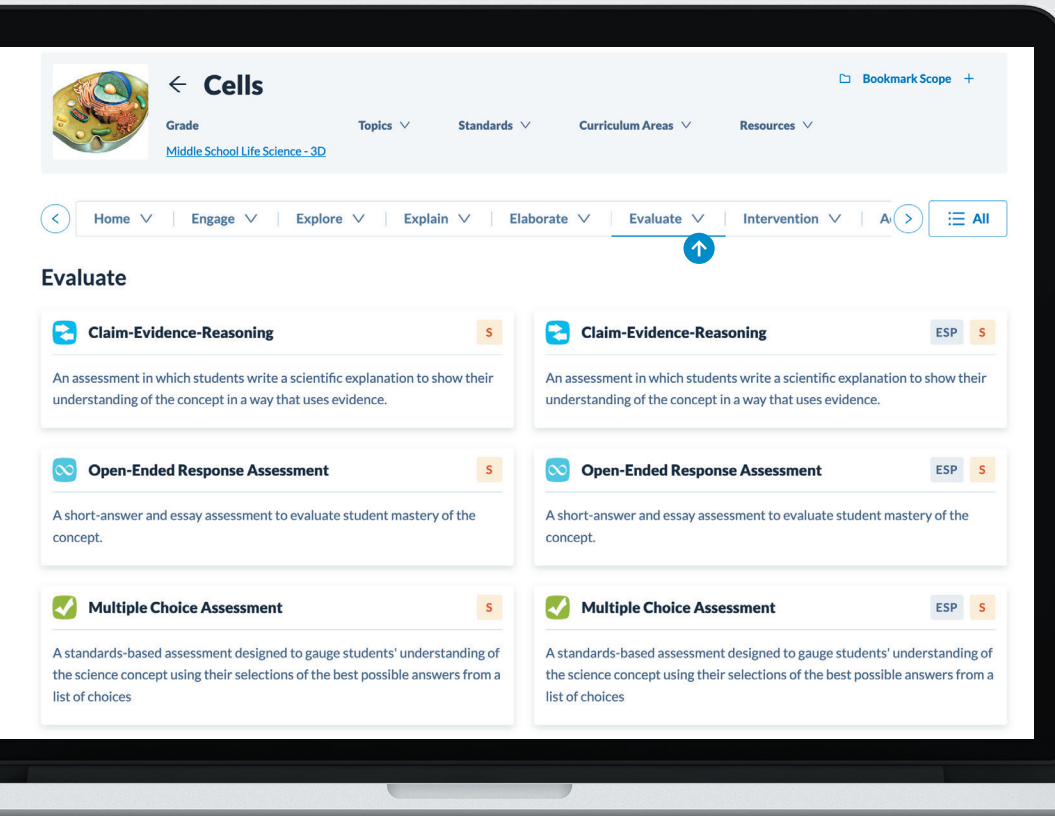
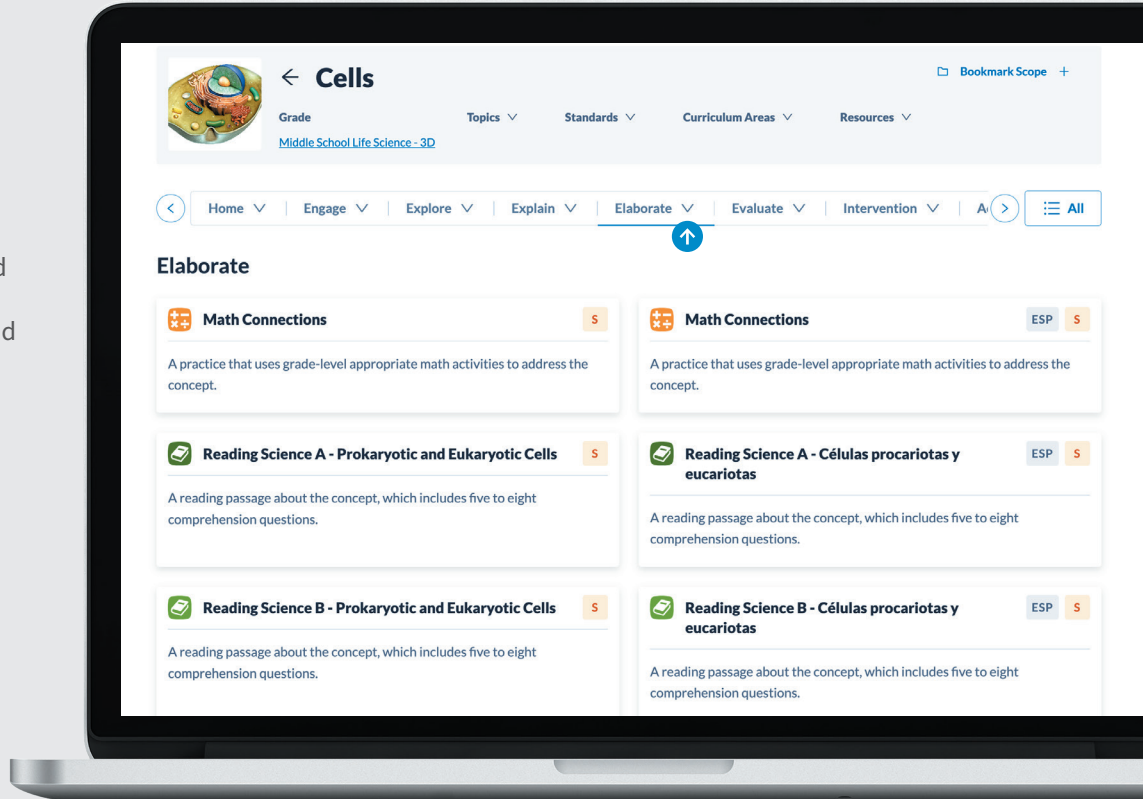
With **Explain**, your students dive even deeper into the scope's scientific concepts and phenomena, reinforcing what they've learned and discovered during their hands-on Explore activities. Students discover additional, detailed answers to their questions and expand their learning through differentiation based on their individual needs. Also during **Explain**, your students can connect their experiences with literacy through the STEMscopedia informational text and Picture Vocabulary.

The screenshot shows the 'Cells' scope page in the Explain section. The page title is 'Cells' and it is part of the 'Middle School Life Science - 3D' curriculum. The navigation bar includes 'Home', 'Engage', 'Explore', 'Explain', 'Elaborate', 'Evaluate', and 'Intervention'. The 'Explain' section is active, showing a grid of resources:

- Picture Vocabulary** (S) - A slide presentation of important vocabulary terms along with a picture and definition.
- Picture Vocabulary** (ESP, S) - A slide presentation of important vocabulary terms along with a picture and definition.
- Linking Literacy** (T) - Strategies to help students comprehend difficult informational text.
- Linking Literacy** (S) - Strategies to help students comprehend difficult informational text.
- Linking Literacy** (ESP, S) - Strategies to help students comprehend difficult informational text.
- STEMscopedia** (S) - Reference materials that includes parent connections, career connections, technology, and science news.
- STEMscopedia** (ESP, S) - Reference materials that includes parent connections, career connections, technology, and science news.
- Communicate Science - Informative Speech** (T) - A class activity in which students use different forms of communication to discuss scientific topics connected to the content of this scope.
- Concept Review Game** (S) - A game to review concepts.
- Concept Review Game** (ESP, S) - A game to review concepts.

→ **ELABORATE**

Elaborate is designed for enrichment, application, and cross-curricular connection. This is where students further build upon their previous learning, connecting learned concepts to themselves and the world around them through math, reading, simulations, scientific careers, and other valuable activities. These resources help students tie both the investigative and everyday phenomena together with real-world scenarios and events.

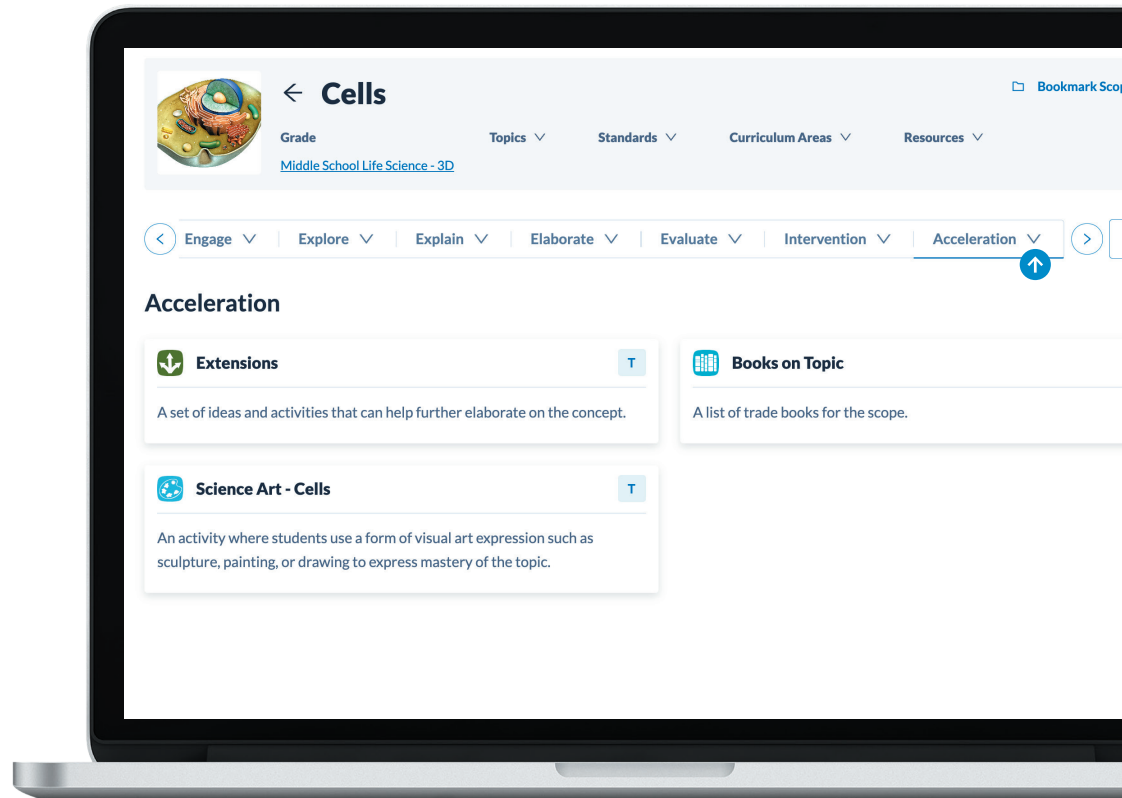
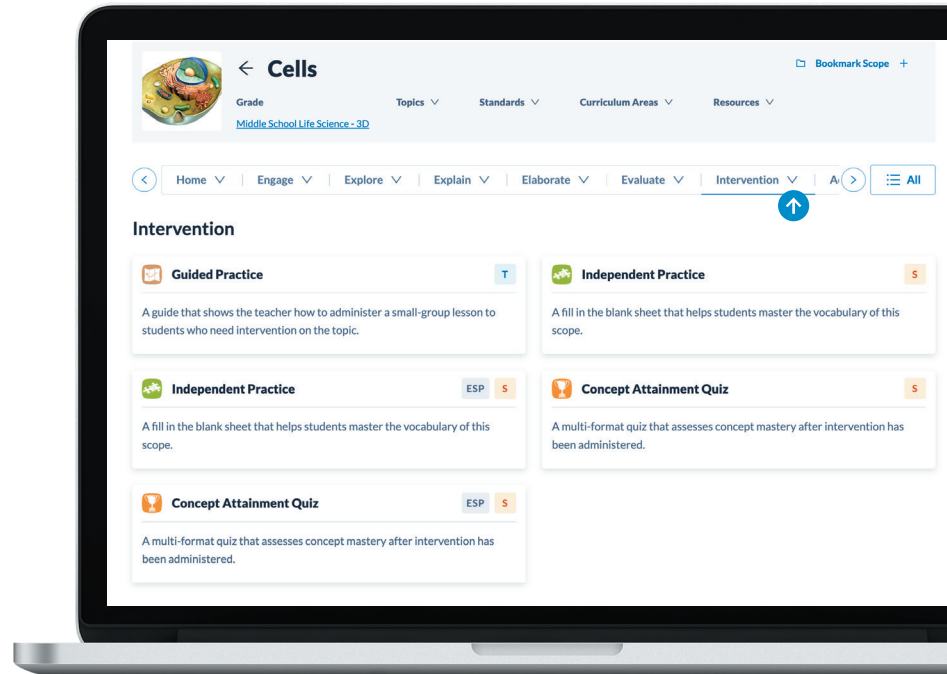


→ **EVALUATE**

Evaluate allows you to summatively assess student learning. We provide several tools for you to assess learning as students critically reflect on the scope’s phenomena, including Claim-Evidence-Reasoning, open-ended response, and auto-graded multiple choice assessments.

→ INTERVENTION & ACCELERATION

We believe **Intervention** and **Acceleration** are critical to the modern classroom. In addition to providing everything you need to complete a 5E lesson sequence, STEMscopes provides even more options for differentiated instruction. Whether a student requires guided instruction, or is ready to take learning to the next level, we make sure every student has the supports they need.



Hands-on Kits and Prints

STEMscopes NGSS 3D digital curriculum includes everything educators need to plan and deliver comprehensive science instruction. Students can access all of the curriculum features digitally, or teachers can print the resources and modify them to meet specific student needs. Optional full-color consumable Student Notebooks and reusable STEMscopedias are available for purchase in order to save on the cost of printing and distributing large numbers of colored handouts. Whether teachers prefer a fully digital curriculum, a paper-based curriculum, or a blended approach, STEMscopes NGSS 3D meets their needs.

Hands-On Materials

Kit images are for example purposes only, and items shown may or may not be included in each specific edition of the kits. For more details on what is included in your edition, please contact your STEMscopes account manager.

HANDS-ON KITS*

- Reusable and consumable items for hands-on activities
- Packaged for each scope
- Serves 24 students (grades K-4) or 32 students (grades 5-8)

*Does not contain common school supplies (e.g., paper, glue, scissors) or basic equipment.

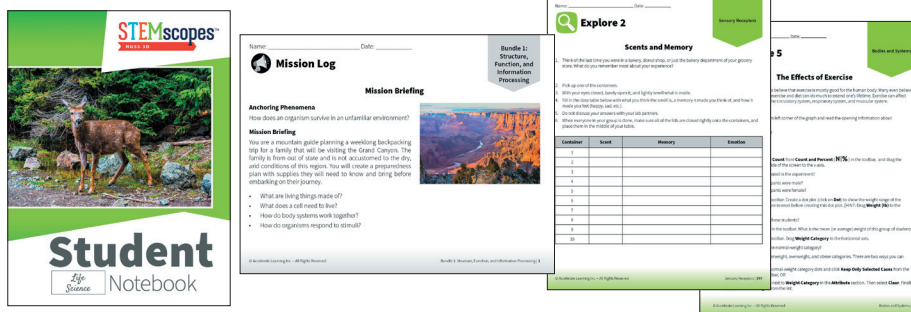
CONSUMABLE KITS

- Consumable items
- Refillable for extended use across multiple classroom sections
- Serves 24 students (grades K-4) or 32 students (grades 5-8)
- Recommended: one consumable kit per each additional section

Print

STUDENT NOTEBOOK A consumable lab notebook containing full-color versions of the Explore labs and other student activities, such as the Graphic Organizer, Reading Science, and Claim-Evidence-Reasoning assessment. The Student Journal pages use a 45-lb paper weight and are perforated for ease of use. Each includes a table of contents and activity handouts. (One per student is recommended).

LIFE SCIENCE PRINT SAMPLE, STUDENT NOTEBOOK



STUDENT STEMSCOPEDIA A hardback version of the curriculum's digital textbook to help students figure out the everyday and investigative phenomena within each scope. Each section includes probing questions for formative assessment, as well as parent connection resources. (Recommended as a shared classroom set.)

LIFE SCIENCE PRINT SAMPLE, STEMSCOPEDIA



TEACHER GUIDE An overview of the curriculum for each segment (unit) of instruction, including suggested pacing guides, teacher facilitation points, and a summary of science content background knowledge.



Step Up Your STEM Instruction



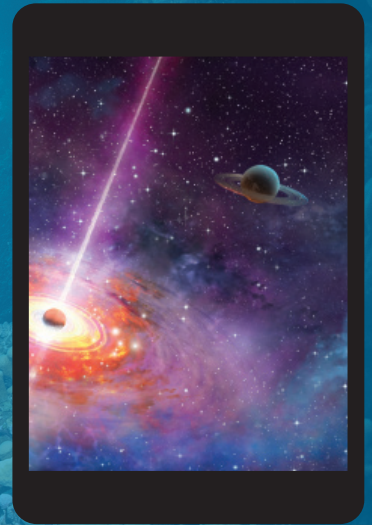
STEMscopes™
K-12 SCIENCE

Stream media that reveals the wonder of STEM

Explore the world of phenomena in a whole new way! STEMscopes and BBC Learning have partnered to offer you a full library of world-class, dynamic videos, current events, behind-the-scenes photography, and integrated activities for the classroom.

Igniting Inquiry with World-Class STEM Content

- + An exciting new way to explore phenomena
- + Integrated discussion questions, writing prompts, and hands-on extensions
- + Supported communication, literacy, and lab investigations



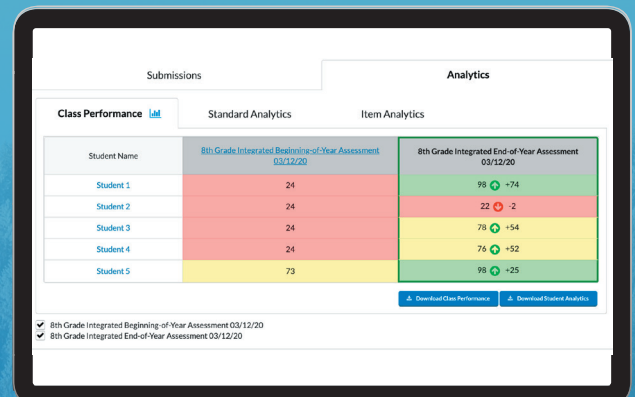
STEMscopes™
ASSESSMENT PACKAGE
K-12 SCIENCE

Identify and address student learning gaps

The Assessment Package expands the assessment tools and resources available in STEMscopes. Save time designing equitable test questions while accessing data analytics to quickly determine how to reteach, accelerate, and flexibly group your students.

What's included:

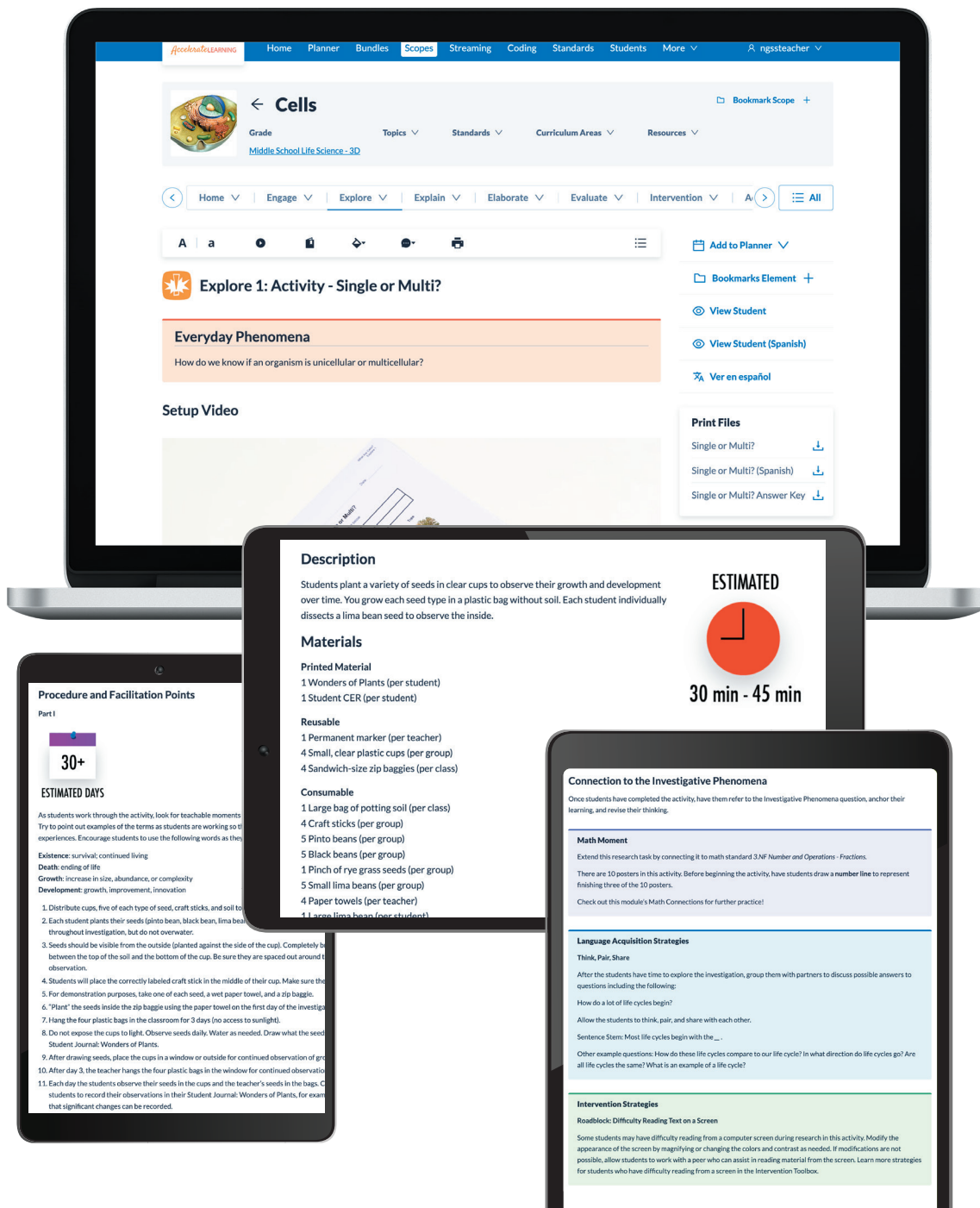
- + Beginning-of-Year and End-of-Year benchmark assessments that address all three dimensions of the NGSS
- + Expanded bank of assessment questions for use in building custom assessments
- + Integrated data analytics that indicate student mastery of each domain within each dimension of the NGSS, including all eight science and engineering practices and all seven crosscutting concepts



Professional Learning

Bite-sized morsels of professional learning are embedded and free throughout the STEMscopes curriculum. These teacher-friendly learning opportunities are within every Explore (lesson) and reinforce helpful strategies to promote the instructional fidelity of the NGSS and student achievement.

In-Lesson Facilitation Points, 3D Callouts, Instructional Strategies, Math Moments, and STEM Best Practices



Cells



Grade
Middle School Life Science - 3D

Home Engage Explore Explain Elaborate Evaluate Intervention A >

Explore 1: Activity - Single or Multi?

Everyday Phenomena

How do we know if an organism is unicellular or multicellular?

Setup Video



- Add to Planner
- Bookmarks Element
- View Student
- View Student (Spanish)
- Ver en español
- Print Files
 - Single or Multi?
 - Single or Multi? (Spanish)
 - Single or Multi? Answer Key

Description

Students plant a variety of seeds in clear cups to observe their growth and development over time. You grow each seed type in a plastic bag without soil. Each student individually dissects a lima bean seed to observe the inside.

Materials

- Printed Material**
- 1 Wonders of Plants (per student)
 - 1 Student CER (per student)
- Reusable**
- 1 Permanent marker (per teacher)
 - 4 Small, clear plastic cups (per group)
 - 4 Sandwich-size zip baggies (per class)
- Consumable**
- 1 Large bag of potting soil (per class)
 - 4 Craft sticks (per group)
 - 5 Pinto beans (per group)
 - 5 Black beans (per group)
 - 1 Pinch of rye grass seeds (per group)
 - 5 Small lima beans (per group)
 - 5 Paper towels (per teacher)
 - 1 Large lima bean (per student)

ESTIMATED



30 min - 45 min

Procedure and Facilitation Points

Part I

30+

ESTIMATED DAYS

- As students work through the activity, look for teachable moments. Try to point out examples of the terms as students are working so they can use them in their own work. Encourage students to use the following words as they work.
- Existence:** survival; continued living
Death: ending of life
Growth: increase in size, abundance, or complexity
Development: growth; improvement; innovation
- Distribute cups, five of each type of seed, craft sticks, and soil to each student.
 - Each student plants their seeds (pinto bean, black bean, lima bean) in a plastic bag without soil.
 - Seeds should be visible from the outside (planted against the side of the cup). Completely bury the seeds in the soil and the bottom of the cup. Be sure they are spaced out around the cup.
 - Students will place the correctly labeled craft stick in the middle of their cup. Make sure the stick is standing upright.
 - For demonstration purposes, take one of each seed, a wet paper towel, and a zip baggie.
 - "Plant" the seeds inside the zip baggie using the paper towel on the first day of the investigation.
 - Hang the four plastic bags in the classroom for 3 days (no access to sunlight).
 - Do not expose the cups to light. Observe seeds daily. Water as needed. Draw what the seed looks like in your Student Journal: Wonders of Plants.
 - After drawing seeds, place the cups in a window or outside for continued observation of growth.
 - After day 3, the teacher hangs the four plastic bags in the window for continued observation.
 - Each day the students observe their seeds in the cups and the teacher's seeds in the bags. Students record their observations in their Student Journal: Wonders of Plants, for examples of significant changes can be recorded.

Connection to the Investigative Phenomena

Once students have completed the activity, have them refer to the Investigative Phenomena question, anchor their learning, and revise their thinking.

Math Moment

Extend this research task by connecting it to math standard 3.NF Number and Operations - Fractions. There are 10 posters in this activity. Before beginning the activity, have students draw a number line to represent finishing three of the 10 posters.

Check out this module's Math Connections for further practice!

Language Acquisition Strategies

Think, Pair, Share

After the students have time to explore the investigation, group them with partners to discuss possible answers to questions including the following:

How do a lot of life cycles begin?

Allow the students to think, pair, and share with each other.

Sentence Stem: Most life cycles begin with the...

Other example questions: How do these life cycles compare to our life cycle? In what direction do life cycles go? Are all life cycles the same? What is an example of a life cycle?

Intervention Strategies

Roadblock: Difficulty Reading Text on a Screen

Some students may have difficulty reading from a computer screen during research in this activity. Modify the appearance of the screen by magnifying or changing the colors and contrast as needed. If modifications are not possible, allow students to work with a peer who can assist in reading material from the screen. Learn more strategies for students who have difficulty reading from a screen in the Intervention Toolbox.

Quality Instruction Matters

STEMscopes believes the most important strategy schools can use to significantly increase student learning is the quality of instruction. Students flourish when teachers deeply understand the content and make use of all available instructional resources.

We provide professional learning services that focus on evidence-based instructional strategies that strengthen student learning while simultaneously nurturing the attitudes and skills fundamental to implementing a successful STEM program.

Training Methods to Suit Every Teacher



On-site



Online Portfolios



Virtual



Individual and
Small Group
Coaching



Blended

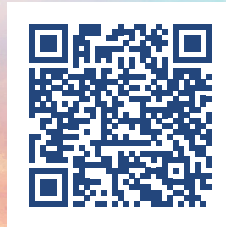


Group Workshops



Online Courses

Click or scan the QR code to create your own custom-tailored plan for STEM excellence
or visit acceleratelearning.com/professional-learning/





NGSS 3D
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